

MILWAUKEE COUNTY POND & LAGOON MANAGEMENT PLAN



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Milwaukee County Pond, Lagoon & Lake Management Plan

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I. Executive Summary

Milwaukee County owns and maintains 68 ponds, lakes and lagoons (hereafter referred to as lagoons) within the County Parks System, County Grounds, and other facilities. Over the past few years, citizens and County Supervisors have raised concerns about the environmental quality of these water bodies. In response to these concerns, Milwaukee County authorized a study to develop a comprehensive lagoon management plan. The County sought and obtained financial assistance for the planning through two Wisconsin DNR Lake Management Planning grants. The purpose of the study is to assess the current environmental quality of the lagoons and recommend improvements consistent with the anticipated uses. The objectives of this plan are to:

- Evaluate basic water quality conditions in representative lagoons
- Identify and prioritize needs for lagoon improvements and set long-term goals
- Identify water quality management objectives
- Compare observed conditions to water quality objectives

Field investigations included the sampling of water quality from 18 lagoons and testing sediment from 13 lagoons. Water quality testing included basic water quality parameters, as well as bacteria for pre- and post-rainfall events. Sediments were tested for select heavy metals and pesticides. Not all lagoons could be tested due to budgetary constraints. The lagoons tested were selected to provide a representative sampling of all the lagoons.

Results of the testing indicate that most of the water bodies are in a eutrophic state. Large quantities of nutrients, e.g., phosphorous, are stored in sediments and provide a source of nutrients for growth of algae and noxious aquatic plants. These plants deter fishing and degrade aesthetic value. When compared to test results gathered from seven lagoons in the early 1980's, *there appears to be a trend toward increasing phosphorous levels in many of the lagoons*, most notably Jackson Park lagoon. This translates into higher algae levels and hence higher turbidity.

Results of bacteria testing found that *E. coli* bacteria were present in many lagoons at elevated levels. Some measurements exceeded the advisory levels established for swimming beaches. County ordinances, however, prohibit swimming in the lagoons and therefore the *E. coli* should not pose an imminent risk to human health. Wisconsin does not have a regulatory limit for recreational uses involving more casual contact, such as fishing and boating. States that have established bacteria limits for this type of use have adopted levels in the range of 1,000 CFU/100mL (average) or higher. In general, the County's lagoons appear to be below this criterion.

Sediment testing indicates the presence of some contaminants, such as heavy metals (mercury). While Wisconsin does not have regulatory limits for sediment, the observed concentrations (with a few exceptions) appear to be within guidelines developed by the WDNR.

Most of the park lagoons suffer from shoreline erosion and poor water quality. The erosion is a result of natural causes (e.g., wave action) combined with extensive human use, waterfowl grazing, and current turf management practices. Historically, Milwaukee County has not been proactive in reversing the trends of erosion and declining water quality. Studies conducted more than a decade ago identified many of the same issues. *Most of these issues persist and many have worsened.* This is likely the result of budgetary constraints and because the problem is complex and involves a variety of considerations, some of which have a significant level of uncertainty.

Rectifying all the issues identified in this and previous studies would be difficult from a fiscal standpoint, particularly given the uncertainties in the effectiveness of certain remedies. No action, however, will only result in continued degradation of water quality. The recommendation of this study is to consider the use of alternative remedies at three select sites (Dineen Park, Humboldt Park, and Jacobus Park) and evaluate the effectiveness of the alternative measures. These "pilot" projects propose the use of alternative solutions, including biologs, buffer gardens, and pond draining, to improve water conditions. Because the approaches are significantly different than means used in the past, they should be deployed on a limited basis to gauge the effect and public reaction to actions that may create significant differences in appearance of the lagoons. If effective, then consider implementing the measures on a broader scale. In this manner, the County can make progress with constrained funding and answer questions regarding the implementability and effectiveness of the measures.

Concurrent with the proposed actions encompassed in the pilot projects, the County should continue its efforts to reduce sedimentation of its streams and remove extensive silt accumulation in lagoons. Silt accumulation is a significant contributor to the deterioration of water quality and aesthetic value. Dredging accumulated sediments may help to remove a primary source of nutrients to nuisance aquatic plants. Streambank erosion control actions and dredging will help improve or preserve water quality.

The problems of water quality in the ponds and lagoons are complex. A coordinated effort between County resources, including the landscape architects, landscape services, engineering, parks maintenance, the natural areas manager, and the local community is essential to a successful outcome. Pilot programs should seek input from the local community to better define the anticipated outcome of each pilot and to assess the potential for community involvement in construction and/or maintenance of proposed measures.